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LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT  
OTTAWA, CANADA

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BULLETIN No. 283

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ALE (BEER)

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**ALE (BEER)**

OTTAWA, March 26, 1914.

WM. HIMSWORTH Esq.,  
Deputy Minister Inland Revenue.

SIR,—I beg to hand you a report dealing with 75 samples sold as Ale or Beer. These were obtained by our inspectors throughout Canada in September, October and November of last year.

Table I. Shows the sources of the samples; the prices paid for them, the names of manufacturer or furnisher and remarks made by the inspector.

Table II. Gives the numerical results of analysis in the same order as that of the samples in Table I.

Table III. Contains the numerical results of analysis arranged in such order as to render comparable among themselves those obtained with ales of similar name. With regard to this table it is to be observed that the same manufacturer may offer ales of different brands or strengths or quality, so that it may not in every case, mean actual carelessness in manufacture when the analytical results obtained with ales which appear in juxtaposition in this table, show considerable differences. It may be that the information furnished to us with the samples was insufficient to make evident these different brands.

This explanation is made as just to the manufacturer; but a careful study of the Table III, shows that, among different samples of ale having the same nominal origin, a decided similarity is found. This must be taken to indicate a systematic method obtaining in manufacture, and great care taken in the following out of such method.

An Order in Council of February 8, 1911 (published as Circular G. 947) defines malt liquors, as below:—

**6. MALT LIQUORS AND MALT BEVERAGES.**

1. Malt Liquor is a beverage made by the alcoholic fermentation of an infusion, in potable water, of barley malt and hops.

2. Ale or beer is a beverage produced by top fermentation of an infusion, in potable water, of barley malt and hops; with or without other starchy and saccharine matters, and contains in one hundred (100) cubic centimetres (20° C.) not less than two and seventy-five one-hundredths (2.75) grammes of alcohol (equivalent to six (6) per cent by volume of proof spirits), nor less than three and one half (3.5) grammes of extract, and not less than eleven one-hundredths (0.11) gramme of ash, chiefly potassium phosphate.

3. Porter and stout are varieties of ale or beer made in part from highly roasted malt, or barley, and agree, in other respects, with the requirements for ale and beer.

4. Lager Beer, is beer produced by bottom fermentation which contains, in one hundred (100) cubic centimetres (20° C.) not less than three and one half (3.5) grammes of extractive matter and eleven one-hundredths (0.11) gramme of ash, chiefly potassium phosphate, and not less than two and fifty-one hundredths (2.50) grammes of alcohol, equivalent to four and four-tenths (4.4) per cent by volume, of proof spirits.

5. Light Beer, is a beer containing in one hundred (100) cubic centimetres, at 20° C. less than two grammes of alcohol (equivalent to less than four and four-tenths (4.4) per cent by volume of proof spirits).

Except in its minimum alcohol value it will be seen that lager beer is defined with the same constants as ale.

The extractive matter is slightly below legal requirements in 7 samples, and decidedly low in 8 samples of the present collection.

It is hoped that a study of the analytical numbers herein placed on record will enable us to so interpret them as to arrive at a judgment regarding the mode of manufacture of ales, and the materials employed. This difficult problem is now engaging the attention of other chemists, and some encouraging results have been obtained. In order to its solution it will be necessary to make experimental research upon ales of known origin; and it has been found impossible with my limited staff, to carry the work to completion.

In order that these analytical data may be available to those interested, I would respectfully advise publication of the report as Bulletin No. 283.

I have the honour, to be, Sir,  
Your obedient servant,

A. MCGILL,  
*Chief Analyst.*

## BULLETIN No. 283—ALE (BEER)—TABLE I.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.		Inspector's Report. (Is no an expression of Opinion).
				Quantity.	Cents.	Manufacturer.	Furnisher.	

## DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.

1913.								
Oct. 22	Ale	54301	Halifax Breweries, Ltd., Halifax, N.S.	3 bots.	Nil.	Vendors.....		India Pale Ale.
" 22	"	54302	Kelley & Glassey, Halifax, N.S.	3 "	40	McEwen, Edinburgh, Scot.	Mfr .....	Scotch Ale.
" 22	"	54303	" " "	3 "	45	Bass & Co., London, Eng.	G. C. Hibberts & Co., London, Eng.	Pale Ale.
" 22	"	54304	A. Keith & Son, Halifax, N.S.	3 "	Nil.	Vendors.....		"
" 22	"	54305	Oland & Son, Halifax, N.S.	3 "	"	" .....		"

## DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Sept. 20	Ale (Beer)	50362	Simeon Jones, Ltd., St. John, N.B.	3 bots.	50	Vendors ..		
" 24	"	50363	Ready's Breweries, Ltd., St. John, N.B.	3 "	50	" .....		Ready's Pale Ale. Diamond R.
" 29	"	50364	Comeau & Sheehan, St. John, N.B.	3 "	75	Alexander Keith & Son, Halifax, N.S.		Nova Scotia Brewery. "Veritas Vincent."
" 29	"	50365	John Labatt, Ltd., St. John, N.B.	3 "	60	John Labatt, Ltd., London, Ont.		India Pale Ale.
" 29	"	50366	R. Sullivan & Co., St. John, N.B.	3 "	75	Bass & Co., Burton Trent, Eng.		India Pale Ale. "Hawk's Head."

## DISTRICT OF QUEBEC—F. X. W. E. BELAND, INSPECTOR.

Sept. 23	Ale (Beer)	56144	G. Pepin, 132 Rue Massue, Quebec.	3 bots.	37	Fox Head, Quebec.	Mfr.....	
" 23	"	56145	" " "	3 "	37	Brasserie & Champlain, Quebec.	" .....	
" 23	"	56146	" " "	3 "	42	Bossnell, Quebec.	" .....	
" 23	"	56147	" " "	3 "	32	FoxHead, Quebec.	" .....	
" 23	"	56148	O. Bacon, 28 Rue Hermine, Quebec.	3 "	40	Bossnell, Quebec.	" .....	

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				Quantity.	Cents.	Manufacturer.	Furnisher.	

## DISTRICT OF THREE RIVERS—DR. V. P. LAVALLÉE, INSPECTOR

1913.								
Sept. 19	Ale	59726	A. L. Caisse, Ber-3 bots, thierville.	45	Dawes Co., Lachine.			
" 19	"	59727	O. Paquette, Ber-3 " " thierville.	45	Gold Lion Brewing Co., Ltd., Valleyfield.			
" 19	"	59728	J. A. Laporte, Ber-3 " " thierville.	30	Eckers Brewing Co., Montreal.			
" 22	"	59729	George Gouin, St. 3 " " Felix de Valois.	30	Silver Spring, Sherbrooke.			
" 22	"	59730	Ludger Duperrault, 3 " " St. Felix de Valois.	50	Molson, Montreal.			

## DISTRICT OF EASTERN TOWNSHIPS—J. C. ROULEAU, INSPECTOR.

Sept. 29	Beer	1729	J. U. Brunnette, 3 bots Victoriaville.	35	Silver Spring Brewery, Ltd., Sherbrooke.		Silver Spring.
Oct. 1	"	1730	Silver Spring Brew-3 ery, Ltd., Sherbrooke.	35	Vendors		
" 1	"	1731	National Breweries, 3 " " Ltd., Sherbrooke.	25	Wm. Dow & Co., Montreal		Dow's
" 13	"	1732	Leop. L. Huereux, 3 " " St. Hyacinthe.	25	St. Lawrence Brewery, Ltd., Cornwall.		Cornwall.
" 13	"	1733	F. Orsali & Cie, St. 3 " " Hyacinthe.	25	Dow's Breweries, Lachine.		Red Horse.

## DISTRICT OF MONTREAL—D. J. KEARNEY, INSPECTOR.

Nov. 4	Beer	58616	N. Lalonde, 364 Charlevoix st., Montreal	3 bots	38	Dawes Breweries, Lachine.		Black Horse Ale
" 4	"	58617	H. Harel, 361 Charlevoix st., Montreal	3 "	38	Wm. Dow & Co.		
" 4	"	58618	A. Jean, 471 Charlevoix st., Montreal	3 "	31	Canadian Breweries.		
" 4	"	58619	A. Kathe, 555 Grand Trunk st., Montreal	3 "	38	John H. R. Molson & Bros.		
" 4	"	58620	E. Valade, 230 Chateauguay st., Montreal	3 "	30	The Independent Breweries, Co., Ltd.		



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				Quantity.	Cents.	Manufacturer.	Furnisher.	

## DISTRICT OF VALLEYFIELD—D. J. KEARNEY, ACTING INSPECTOR.

1913.								
Nov. 12	Beer . . .	58656	John McDonald, River Beaudette.	3 bots	45	John McCarthy & Sons, Prescott.		Red Horse Ale
" 12	" . . .	58657	M. Beauchamp, River Beaudette.	3 "	45	Dawes Breweries, Lachine.		
" 20	" . . .	58658	Salaberry Hotel, Valleyfield.	3 "	45	Gold Lion Brewing Co., Valleyfield.		
" 20	" . . .	58659	Arthur Sauve, Valleyfield.	3 "	45	"		
" 20	" . . .	58660	A. P. Leduc, Valleyfield.	3 "	45	"		

## DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Sept. 30	Ale . . . . .	42895	Chelsen Trading Co., Ltd., Bank st., Ottawa.	3 bots	45	Wm. Dow & Co., Montreal	Dawes, Ottawa.	Indian Pale Ale.
" 30	" . . . . .	42896	" . . . . .	3 "	45	Dawes, Ottawa	Manufacturers.	"
" 30	" . . . . .	42897	Jos. Lavigne, Wellington st., Ottawa.	3 "	45	The Brading Brewing Co., Ltd., Ottawa	"	This ale is brewed from pure malt and the best English Bavarian hops.
" 30	" . . . . .	42898	" . . . . .	3 "	45	Carling's Ottawa.	"	
Oct. 3	" . . . . .	42899	Walter Cunningham, Rideau st., Ottawa.	3 "	45	The Reinhardt Salvador Brewery Ltd. Toronto.	"	Sterling Special.

## DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

Sept. 18	Beer . . . . .	60026	James McParland, Kingston.	3 bots.	45	Labatts, London.		
" 18	" . . . . .	60027	J. Gordon, Kingston.	3 "	45	Coplands, Toronto.		
" 18	" . . . . .	60028	G. Thompson, Kingston.	3 "	45	J. Fisher, Portsmouth.		
" 18	" . . . . .	60029	E. Beaupre, Kingston.	3 "	60	O'Keefe, Toronto.		
" 22	" . . . . .	60030	J. Ray, Belleville	3 "	27	Vendor . . . . .		

## DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

Sept. 17	Beer . . . . .	57484	J. W. Ryan, 188 Queen St., West, Toronto.	3 bots.	36		The Cosgrave B. Co., Ltd., Toronto.	
" 18	" . . . . .	57485	H. P. Redway, 212 Queen St., East, Toronto.	3 "	35		The Don B. Co., Ltd., Toronto.	Pale Ale.



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				Quantity.	Cents.	Manufacturer.	Furnisher.	
DISTRICT OF TORONTO—Concluded.								
1913.								
Sept. 18	Beer.....	57486	John Mather, 152 King St., East, Toronto.	3 bots.	36		Copland B. Co., Ltd., Toronto.	Pale Ale.
" 18	" .....	57487	A. Graham, 3 McCaul St., Toronto.	3 " ..	45		The O'keefe B. Co., Ltd., Toronto.	O'keefe's Special extra mild ale.
" 19	" .....	57488	E. T. Sandell, 525 Young St., Toronto	3 " ..	45		Sleeman & Sons, Ltd., Guelph.	Silver Creek Brewery Ale.
DISTRICT OF HAMILTON—J. J. COSTIGAN, ACTING INSPECTOR.								
Sept. 29	Ale. ....	50865	John O. Carpenter, 10 Market Square, Hamilton.	3 bots.	36	Carlings, London, Ont.		Amber Ale.
" 29	" .....	50866	" " "	3 " ..	36	Grant's Spring B. Co., Ltd.		Pale Ale.
" 29	" .....	50867	" " "	3 " ..	36	Dom B. Co., Ltd., Toronto		Export White Label.
" 29	" .....	50868	M. Cummings, 2 Barton St., Toronto.	3 " ..	30	Grant's Spring B. Co., Ltd.		East India Pale Ale.
" 29	" .....	50869	" " "	3 " ..	30			Labatt's India Pale Ale.
DISTRICT OF WINDSOR—JOHN TALBOT, INSPECTOR.								
Oct. 8	Ale. ....	54412	R. Callinan, Petrolia.	3 bots.	45	J. Labatt, London.		Labatt's India Pale Ale.
" 9	" .....	54414	D. Donaldson, Sarnia.	3 " ..	60	Coplands, Toronto.		Copland's Pale Ale.
" 9	Lager beer	54415	" " "	3 " ..	45	B. Am. B. Co. Windsor.		Cincinnati Cream Export.
" 9	Ale. ....	54421	C. H. Pugh, Sarnia.	3 " ..	50	Carling B. & M. Co., London.		Carling's Amber Ale.
" 9	Lager beer	54422	" " "	3 " ..	50	Walkerville B. Co., Walkerville.		Superior Lager Beer.
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.								
Sept. 27	Ale (Beer)	48941	E. L. Drewery, Winnipeg.	3 bots.	Nil	Vendor .....		Refined Ale.
" 29	" ..	48942	McDonagh & Shea, Winnipeg.	3 " ..		Vendors.....		
" 30	" ..	48943	T. D. Cavanagh, Winnipeg.	3 " ..	50	Bass & Co. ....		Bottled by C. C. Hibbert & Co., London.
" 27	" ..	48944	The Empire Brewing Co., Brandon.	3 " ..		Vendors.....		
" 27	" ..	48945	The Brandon Brewing Co., Brandon.	3 " ..		" .....		

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				Quantity.	Cents.	Manufacturer.	Furnisher.	

## DISTRICT OF ROCKY MOUNTAINS—THOS. PARKER, INSPECTOR.

1913.								
Oct.	2 Beer.....	49961	E. A. Taylor, Nelson, B.C.	3 bots.	1.00	Fernie Fort Steele B. Co., Fernie.		
"	2 " ..	49962	Nelson Brewery Co., Nelson, B.C.	3 "	1.00	Vendors.....		
"	17 " ..	49987	Pollock Wine Co., Fernie, B.C.	3 "	1.00	Elk Valley B. Co., Michel, B.C.		
Nov.	1 " ..	49988	A. Mueller, Trail, B.C.	3 "	1.00	Vendor .....		
"	3 " ..	49989	Smith & Belton, Rossland, B.C.	3 "	1.00	Le Roi B. Co., Rossland, B.C.		

## DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Sept.	24 Ale. ....	57641	T. J. Jackman, 608 View St., Victoria, B.C.	3 qts..	50	Silver Spring B. Co., Ltd., Victoria, B.C.		Tate's English Ale.
"	24 " .....	57642	B.C. Wine Co., Ltd., 1216 Douglas St., Victoria, B.C.	3 "	45	Victoria Phoenix B. Co., Ltd., Victoria, B.C.		Victoria Phoenix Ale.
Oct.	6 " .....	57645	The West End Grocery Co., Ltd., 1002 Government St., Victoria, B.C.	3 "	90	Bass & Co., Eng.		Bass's Red Label Pale Ale.
"	6 " .....	57646	D. Stewart, 607 Yates St., Victoria, B.C.	3 "	90	Meux & Co., London.		Meux's London Pale Ale.
"	6 " .....	57647	Dixie H. Ross & Co., 1316 Broad St., Victoria, B.C.	3 "	90	Bass & Co., Eng.		Bass & Co., Pale Ale Beaver Brand.

BULLETIN No. 283—ALE—(BEER)—TABLE II.

Name of Inspectoral District.	No. of Sample.	Specific Gravity at 15° C.				Alcohol p. c.				Solids in Original wort.				Solids in Beer p. c.				Malt used. Pounds per Gallon.	Degree of Fermentation.	Total Acidity Grams as Lactic per 100cc.	Ash.	Protein.		P. & O <sub>2</sub> .	Salicylic Reaction.	SO <sub>2</sub> .	No. of Sample.	Remarks and Opinion of the Chief Analyst.
		Diastilate.	Residue.	Weight.	Volume.	Proof Spirit.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.												
Nova Scotia . . .	54301	1.0056	0.98077	1.0158	6.02	7.51	12.04	13.37	16.08	4.98	2.75	74.64	0.32	0.29	0.656	0.096	negative	.....	54301	Extractive low								
	54302	0.9997	0.99060	1.0001	5.51	6.87	13.16	13.37	2.32	2.26	82.41	0.35	0.256	0.300	0.056	"	.....	54302										
	54303	1.0091	0.99070	1.0184	5.44	6.78	11.89	15.65	4.77	2.06	69.53	0.29	0.336	0.484	0.066	"	.....	54303										
	54304	1.0075	0.99073	1.0108	5.41	6.75	11.84	15.16	4.34	2.38	71.85	0.34	0.270	0.646	0.089	"	.....	54304										
	54305	1.0055	0.99270	1.0128	4.19	5.24	9.18	11.68	3.30	1.94	71.73	0.23	0.202	0.672	0.072	salicylic	.....	54305										
New Brunswick . . .	50362	1.0075	0.99292	1.0154	6.17	7.17	10.10	12.96	3.74	2.16	71.12	0.54	0.320	0.562	0.063	negative	.....	50362	Extractive slightly low.									
	50363	1.0078	0.99074	1.0171	5.41	6.75	11.84	15.24	4.42	2.19	71.01	0.53	0.320	0.644	0.068	"	.....	50363										
	50364	1.0088	0.99346	1.0153	3.73	4.66	8.23	11.41	3.95	1.89	65.37	0.35	0.250	0.554	0.077	"	.....	50364										
	50365	1.0111	0.99245	1.0186	4.34	5.43	9.52	13.50	4.85	2.25	64.30	0.30	0.334	0.686	0.066	"	0.0063	50365										
	50366	1.0064	0.98956	1.0168	6.17	7.69	13.48	16.68	4.34	2.81	73.98	0.38	0.334	0.534	0.080	"	.....	50366										
Quebec . . .	56144	1.0117	0.99257	1.0191	4.27	5.31	9.35	13.50	4.30	2.32	62.52	0.36	0.255	0.360	0.051	"	.....	56144	Extractive low									
	56145	1.0120	0.99271	1.0193	4.18	5.23	9.17	13.37	5.01	2.22	62.52	0.36	0.255	0.360	0.051	"	.....	56145										
	56146	1.0088	0.99246	1.0183	4.33	5.42	9.50	13.40	4.74	2.24	64.61	0.39	0.264	0.630	0.080	"	.....	56146										
	56147	1.0133	0.99361	1.0203	3.98	4.98	8.73	13.24	5.28	2.21	60.12	0.43	0.206	0.522	0.069	"	.....	56147										
	56148	1.0119	0.99231	1.0193	4.23	5.30	9.27	13.47	5.01	2.25	62.81	0.41	0.262	0.618	0.080	"	.....	56148										
Three Rivers . . .	59726	1.0119	0.99397	1.0188	3.96	4.95	8.68	12.80	4.88	2.13	61.87	0.35	0.296	0.636	0.079	"	.....	59726	Extractive slightly low.									
	59727	1.0053	0.99297	1.0126	4.21	5.25	9.22	11.67	3.25	1.94	72.14	0.31	0.258	0.668	0.060	negative	.....	59727										
	59728	1.0066	0.99218	1.0144	4.51	5.65	9.89	12.74	3.72	2.12	70.70	0.27	0.208	0.568	0.063	"	.....	59728										
	59729	1.0038	0.99235	1.0114	4.41	5.51	9.65	11.76	2.94	1.95	74.99	0.40	0.216	0.435	0.055	"	.....	59729										
	59730	1.0049	0.99263	1.0119	4.01	5.01	8.74	11.69	3.07	1.83	72.35	0.44	0.244	0.540	0.066	"	.....	59730										
Eastern Townships . . .	1729	1.0051	0.99255	1.0122	4.01	5.12	8.97	11.33	3.15	1.87	72.21	0.42	0.216	0.426	0.058	"	0.0050	1729	Extractive low.									
	1730	1.0067	0.99357	1.0130	3.57	4.47	7.86	10.49	3.85	1.72	66.06	0.20	0.207	0.374	0.055	"	0.0082	1730										
	1731	1.0094	0.99151	1.0179	4.94	6.17	10.81	14.51	4.63	2.44	68.10	0.30	0.297	0.644	0.060	salicylic	0.0017	1731										
	1732	1.0055	0.99286	1.0126	4.09	5.12	8.97	11.43	3.25	1.89	71.58	0.20	0.199	0.402	0.057	"	.....	1732										
	1733	1.0181	0.99247	1.0256	4.33	5.42	9.36	15.27	6.61	2.57	75.37	0.28	0.210	0.472	0.060	"	.....	1733										
Montreal . . . . .	58616	1.0091	0.99368	1.0154	3.60	4.50	7.90	11.17	3.97	1.85	73.43	0.20	0.216	0.480	0.060	"	.....	58616	Extractive slightly low									
	58617	1.0091	0.99368	1.0171	4.60	5.70	10.09	13.62	4.42	2.88	67.56	0.34	0.242	0.632	0.074	"	.....	58617										
	58618	1.0098	0.99306	1.0167	3.96	4.96	8.69	12.23	4.31	2.03	64.76	0.26	0.220	0.482	0.059	"	0.0085	58618										
	58619	1.0096	0.99207	1.0178	4.58	5.73	10.02	13.77	4.61	2.30	66.51	0.45	0.248	0.558	0.068	negative	0.0047	58619										
	58620	1.0146	0.99472	1.0199	2.90	3.75	6.56	11.15	5.17	1.83	53.64	0.35	0.192	0.420	0.060	"	.....	58620										

Valleyfield	58637	1 0116	0 99161	1 0260	1 876 07	10 62	11 90	5 20	2 51	65	100 36	0 311	0 306	0 049	"	58638	0 0074	Extractive low.
	58637	1 0067	0 99355	1 0163	3 79 4 74	8 32	11 79	1 21	1 06	64	28 0 41	0 254	0 480	0 030	salicylic	58637	0 0074	Extractive low.
	58638	1 0046	0 99263	1 0117	4 04 5 06	8 85	11 10	3 02	1 82	72	30 4 0	0 224	0 462	0 017	negative	58638	0 0074	"
	58639	1 0043	0 99261	1 0117	4 24 5 31	9 24	11 30	3 02	1 91	73	74 0 42	0 234	0 462	0 031	"	58639	0 0074	"
Ottawa	5 6501	1 0045	0 99265	1 0118	4 22 5 28	9 24	11 45	3 05	1 90	73	45 0 42	0 246	0 474	0 061	salicylic	58640	0 00110	"
	42846	1 0043	0 99162	1 0174	4 86 6 08	10 64	14 30	4 58	2 40	67	98 0 34	0 260	0 836	0 096	"	42846	0 00660	Extractive slightly low.
	42846	1 0103	0 99261	1 0176	4 20 5 25	9 19	12 95	4 53	2 40	64	86 0 34	0 256	0 632	0 067	negative	42847	0 00660	Extractive slightly low.
	42847	1 0075	0 99226	1 0263	4 46 5 38	9 78	14 25	5 33	2 58	62	61 0 41	0 272	0 500	0 059	"	42848	0 0126	Extractive low.
	42848	1 0128	0 99226	1 0263	4 46 5 38	9 78	14 25	5 33	2 58	62	61 0 41	0 272	0 500	0 059	"	42849	0 00660	Extractive low.
	42849	1 0044	0 99349	1 0169	3 71 4 64	8 72	13 11	4 77	2 25	55	03 0 32	0 236	0 446	0 064	"	42850	0 00633	Extractive low.
Kingston	60026	1 0168	0 99374	1 0221	3 57 4 46	7 82	13 11	4 77	2 25	55	03 0 32	0 236	0 446	0 064	"	60027	0 00633	Extractive low.
	60027	1 0177	0 99325	1 0244	3 85 4 82	8 45	13 51	4 77	2 25	55	03 0 32	0 236	0 446	0 064	"	60028	0 00633	Extractive low.
	60028	1 0108	0 99240	1 0184	4 37 5 47	9 58	13 51	4 77	2 25	55	03 0 32	0 236	0 446	0 064	"	60029	0 00633	Extractive low.
	60029	1 0125	0 99281	1 0197	4 11 5 15	7 38	12 94	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	60030	0 00633	Extractive low.
	60030	1 0153	0 99308	1 0212	3 36 4 21	8 64	12 94	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	60031	0 00633	Extractive low.
Toronto	57 481	1 0126	0 99310	1 0193	3 94 4 93	8 80	14 71	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	57 482	0 00633	Extractive low.
	57 482	1 0136	0 99301	1 0215	4 37 5 73	9 89	14 71	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	57 483	0 00633	Extractive low.
	57 483	1 0181	0 99301	1 0215	4 37 5 73	9 89	14 71	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	57 484	0 00633	Extractive low.
	57 484	1 0181	0 99301	1 0215	4 37 5 73	9 89	14 71	5 06	2 12	61	62 0 41	0 216	0 536	0 064	"	57 485	0 00633	Extractive low.
	57 485	1 0107	0 99280	1 0179	4 12 5 16	9 04	12 87	4 63	2 14	64	01 0 40	0 208	0 532	0 069	"	57 486	0 0074	Extractive slightly low.
	57 486	1 0056	0 99258	1 0132	4 39 5 49	9 61	12 19	4 63	2 14	64	01 0 40	0 208	0 532	0 069	"	57 487	0 0074	Extractive slightly low.
	57 487	1 0115	0 99218	1 0193	4 51 5 65	9 89	14 03	5 01	2 34	64	30 0 47	0 337	0 516	0 076	"	57 488	0 0074	Extractive slightly low.
Hamilton	59863	1 0177	0 99218	1 0193	4 51 5 65	9 89	14 03	5 01	2 34	64	30 0 47	0 337	0 516	0 076	"	59864	0 0071	Extractive slightly low.
	59864	1 0177	0 99218	1 0193	4 51 5 65	9 89	14 03	5 01	2 34	64	30 0 47	0 337	0 516	0 076	"	59865	0 0071	Extractive slightly low.
	59865	1 0177	0 99218	1 0193	4 51 5 65	9 89	14 03	5 01	2 34	64	30 0 47	0 337	0 516	0 076	"	59866	0 0071	Extractive slightly low.
	59866	1 0177	0 99218	1 0193	4 51 5 65	9 89	14 03	5 01	2 34	64	30 0 47	0 337	0 516	0 076	"	59867	0 0071	Extractive slightly low.
	59867	1 0124	0 99186	1 0205	4 71 5 89	10 32	14 75	5 33	2 48	63	87 0 50	0 308	0 630	0 071	salicylic	59868	0 0074	Extractive slightly low.
	59868	1 0203	0 99361	1 0267	3 64 4 55	7 99	14 19	6 91	2 37	51	39 0 41	0 308	0 564	0 074	"	59869	0 0074	Extractive slightly low.
	59869	1 0169	0 99337	1 0226	3 67 4 58	8 04	13 18	5 84	2 19	55	69 0 50	0 314	0 568	0 065	negative	59870	0 0074	Extractive slightly low.
Windsor	54412	1 0043	0 99200	1 0173	4 02 5 78	10 13	13 71	4 47	2 30	67	41 0 30	0 328	0 746	0 083	"	54413	0 0080	Extractive slightly low.
	54413	1 0185	0 99318	1 0253	3 90 4 87	8 54	14 32	6 52	2 39	54	48 0 30	0 256	0 634	0 061	"	54414	0 0080	Extractive slightly low.
	54414	1 0155	0 99468	1 0208	3 01 3 70	6 49	11 42	5 40	1 88	52	71 0 54	0 160	0 722	0 078	"	54415	0 0080	Extractive slightly low.
	54421	1 0103	0 99246	1 0178	4 33 5 42	9 50	13 27	4 61	2 21	65	25 0 41	0 352	0 546	0 054	"	54422	0 0170	Extractive slightly low.
	54422	1 0135	0 99440	1 0191	3 18 3 08	6 97	11 32	4 96	1 86	56	18 0 41	0 168	0 582	0 078	"	54423	0 0170	Extractive slightly low.
Manitoba	48941	1 0101	0 99194	1 0182	4 66 5 83	10 21	14 03	4 71	2 34	66	43 0 25	0 263	0 476	0 058	"	48942	0 0170	Extractive slightly low.
	48942	1 0063	0 99227	1 0170	4 46 5 58	9 76	13 28	4 38	2 21	67	17 0 21	0 288	0 532	0 058	salicylic	48943	0 0170	Extractive slightly low.
	48943	1 0100	0 99124	1 0188	5 10 6 37	11 16	13 08	4 57	2 54	62	47 0 21	0 199	0 628	0 059	"	48944	0 0170	Extractive slightly low.
	48944	1 0138	0 99227	1 0169	4 46 5 58	9 76	13 28	4 38	2 21	67	17 0 21	0 288	0 532	0 058	"	48945	0 0170	Extractive slightly low.
	48945	1 0138	0 99196	1 0219	4 72 5 89	10 32	15 11	5 60	1 98	53	25 0 20	0 174	0 628	0 059	"	48946	0 0170	Extractive slightly low.
Rocky Mountains	49961	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49962	0 0170	Extractive slightly low.
	49962	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49963	0 0170	Extractive slightly low.
	49963	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49964	0 0170	Extractive slightly low.
	49964	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49965	0 0170	Extractive slightly low.
	49965	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49966	0 0170	Extractive slightly low.
	49966	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49967	0 0170	Extractive slightly low.
	49967	1 0124	0 99439	1 0216	3 19 3 99	6 98	11 98	4 85	2 54	62	47 0 21	0 199	0 628	0 059	"	49968	0 0170	Extractive slightly low.
	49968	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49969	0 0170	Extractive slightly low.
	49969	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49970	0 0170	Extractive slightly low.
	49970	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49971	0 0170	Extractive slightly low.
	49971	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49972	0 0170	Extractive slightly low.
	49972	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49973	0 0170	Extractive slightly low.
	49973	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49974	0 0170	Extractive slightly low.
	49974	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49975	0 0170	Extractive slightly low.
	49975	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49976	0 0170	Extractive slightly low.
	49976	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49977	0 0170	Extractive slightly low.
	49977	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49978	0 0170	Extractive slightly low.
	49978	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49979	0 0170	Extractive slightly low.
	49979	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49980	0 0170	Extractive slightly low.
	49980	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49981	0 0170	Extractive slightly low.
	49981	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49982	0 0170	Extractive slightly low.
	49982	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49983	0 0170	Extractive slightly low.
	49983	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49984	0 0170	Extractive slightly low.
	49984	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49985	0 0170	Extractive slightly low.
	49985	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49986	0 0170	Extractive slightly low.
	49986	1 0094	0 99474	1 0182	2 98 3 73	6 54	9 88	3 92	1 62	60	32 0 31	0 138	0 288	0 061	"	49987	0 0170	Extractive slightly low.





[illegible]